The receiver system 530 also receives a 10 MHz signal from the satellite receiver 587. The satellite antenna 580 receives satellite signals and transmits the satellite signals to the satellite receiver 587 over the link 524. The satellite receiver 587 processes the satellite signals to generate the 10 MHz signal. The satellite receiver 587 transmits the 10 MHz signal to the receiver system 530 over the link 526. The receiver system 530 uses the 10 MHz signal as a reference signal.

In some examples, the receiver system 530 communicates with the receiver antenna 575 over the links 522-523 and the O/E converter 585. In this example, the link 522 is a fiber optic cable. Depending on the number of receiver antennas on the base antenna 540, the number of wire cables, such as the link 521, running from the base antenna 540 could become large. A large number of wire cables can be heavy and can add stress to the structure of the base antenna 540. Conversely, fiber optic cable can be lighter than wire cable. Therefore, it may be advantageous to run fiber optic cable between the base antenna 540 and the receiver system 530. In such a case, the O/E converter 585 is used to convert the optical signal to an electrical signal.

FIG. 6 is a block diagram that illustrates the customer premises 600 in an example of the invention. The customer premises 600 is comprised of a transceiver 620, a wireless broadband router 625, an Ethernet hub 630, and a computer (PC) 691. The transceiver 620 is comprised of a directional antenna 635 and a transverter 640. The customer premises 600 also includes a Universal Serial Bus (USB) hub 645, a USB hub 650, a voice system 655, a phone 660, a cable modem 665, a TV 670, a cable box 680, a TV 685, a splitter 675, a wireless broadband router 690, and a sector probe 695.

Examples of the customer premises 600 are residences or businesses. The transceiver 620 is configured to transmit and receive a wireless signal. The transceiver 620 is a transceiver from California Amplifier, Inc. The wireless broadband router 625 is configured to process packets to generate an IF signal, and vice-versa. The wireless broadband router 625 is a Series 2000 Wireless Broadband Router from Hybrid Networks, Inc. The Ethernet hub 630 is

configured to interface multiple Ethernet connections. The Ethernet hub 630 is an Ethernet Hub from Netgear.

The USB hub 645 is a USB hub from Lucent Technologies. The USB hub 650 is an 802.11 wireless Ethernet standard hub from Lucent Technologies. The voice system 655 is configured to process voice data that is transmitted over packets. The splitter 675 is a 3dB splitter. The wireless broadband router 690 is a Series 2000 Wireless Broadband Router from Hybrid Networks, Inc. The sector probe 695 is configured to collect network information from the customer premises side.

The directional antenna 635 connects with the transverter 640 over a link 613. The link 613 is a coaxial cable. The transverter 640 connects with the wireless broadband router 625 over a link 611. The link 611 is an RG-59 coaxial cable. The wireless broadband router 625 connects with the Ethernet hub 630 over a link 612. The Ethernet hub 630 connects with the PC 691 over a link 614. The links 612 and 614 are Ethernet connections. Those skilled in the art will appreciate that the Ethernet hub 630 could also communicate with a Local Area Network (not shown).

The wireless broadband router 625 connects with a USB 616. The USB 616 connects with the PC 692, the USB hub 645, and the USB hub 650. The USB hub 645 connects with the PC 693 over a link 617. The link 617 is an Ethernet connection. The USB hub 650 connects with the PC 694 over a link 618. The link 618 is a wireless Ethernet connection. The wireless broadband router 625 connects with the voice system 655 over a link 619. The voice system 655 connects with a phone 660 over a link 621. The wireless broadband router 625 connects with the cable modem 665 over a link 622. The cable modem 665 connects with the TV 670 over a link 623. The link 623 is a coaxial cable. The cable box 680 connects with the link 611 and is configured to receive a cable television feed. The cable box 680 connects with the TV 685 over a link 624. The link 624 is a coaxial cable.

The link 611 includes the splitter 675. The wireless broadband router 690 connects with the splitter 675 over a link 626. The link 626 is a coaxial cable.

The wireless broadband router 690 connects with the sector probe 695 over a link 627. The configuration and operation of the sector probe 695 will be discussed in further detail in FIGS. 8-13.

Those skilled in the art will appreciate that the transceiver 620, the cable box 680, the voice system 655, the cable modem 665, the USB hub 645, the USB hub 650, and the Ethernet hub 630 could be incorporated within the wireless broadband router 625.

The customer premises 600 operates as follows. The customer premises 600 communicates with the head end 500. To receive data from the head end 500, the directional antenna 635 receives an RF signal on the downstream channel over the link 129. The directional antenna 635 transfers the RF signal to the transverter 640. The transverter 640 processes the RF signal and converts the RF signal to an IF signal. The transverter 640 transmits the IF signal to the wireless broadband router 625 over the link 611. The wireless broadband router 625 processes the IF signal and converts the IF signal into packets containing the data. The wireless broadband router 625 transmits the packets to the Ethernet hub 630 over the link 612. Those skilled in the art will appreciate that the wireless broadband router 625 could transmit packets to the USB hub 645, the USB hub 650, the PC 692, the voice system 655, and the cable modem 665. The Ethernet hub 630 transmits the packets to the PC 691 over the link 614.

To transmit data to the head end 500, the PC 691 transmits packets, containing data, to the Ethernet hub 630 over the link 614. The Ethernet hub 630 transfers the packets to the wireless broadband router 625 over the link 612. The wireless broadband router 625 processes the packets and converts the data contained in the packets into an IF signal. Those skilled in the art will appreciate that the wireless broadband router 625 could also receive packets from the USB hub 645, the USB hub 650, the PC 692, the voice system 655, and the cable modem 665. The wireless broadband router 625 transfers the IF signal to the transverter 640 over the link 611. The transverter 640 processes the IF signal and converts the IF signal into an RF signal. The transverter 640 also amplifies the RF signal. The transverter 640 transmits the RF signal to the directional